1.5

No Date

SUMMARY MEMORANDUM AND WORK PLAN

FOR

CERCLA SITE INSPECTION

AT

NORTH POLE REFINERY (MAPCO)

AK-D083350389

1.0 CONCLUSIONS AND RECOMMENDATIONS

The investigation of North Pole Refinery under CERCLA is not appropriate. Section 104 (a)(2) of CERCLA defines "pollutant or contaminant" as not being 'petroleum, including crude oil and any fraction thereof which is not otherwise specifically listed or designated as hazardous substances under Section 101 (14)(A) through (F) of this title...'. The only contamination at the site is from petroleum based products and materials (JP-4, diesel oil, and feedstock return materials) that have been spilled on the ground. Based on the CERCLA definition, a site investigation of the reported groundwater contamination from petroleum refinery products and processes is not eligible for CERCLA funded activities. It is recommended that a site investigation be undertaken by the Alaska Department of Environmental Conservation (DEC) under existing State water pollution and oil spill prevention and control regulations. Particular concern should be given to the contamination potential of the private and public water supplies due to the spilled fuel. Therefore, Phase II work, consisting of a report summarizing the background data available for the site is recommended to provide support for further DEC actions.

2.0 BACKGROUND DATA REVIEW

As stated in Section 1, this site is not eligible for funding for a site investigation under CERCLA. Preparation of a summary report in Phase II is recommended. The purpose of this data review is to illustrate why there are no CERCLA regulated hazardous wastes on the site and to indicate the type and amount of information available. Most of this information was gathered by Mr. John Cronin of Shannon & Wilson, Inc. (S&W) during a site visit of July 11, 1986.

North Pole Refinery is owned by the MAPCO Petroleum Company of Tulsa, Oklahoma. It is located on a twelve acre site in North Pole, Alaska. The site is flat. The surrounding terrain slopes to the northwest at a 0.1% slope. Surface water flow from the site would enter an adjacent gravel pit with no outlet according to Cronin. About one-half mile northwest of the site is Ditch C, a drainage ditch constructed as part of the Chena River Flood Control Project. This ditch intercepts groundwater flow and carries it 3.5 miles northwest to Chena Slough.

Refinery operation began in the Fall of 1977. Feedstock crude oil is obtained through a buried pipeline from the TransAlaska Pipeline System (TAPS). The residuals left after refining are returned to the TAPS by a second buried pipeline. Since startup, the refinery has produced JP-4, jet fuel, #1 and #2 heating and diesel fuel, and turbine fuel. The turbine fuel is used on-site to run the Golden Valley Electric Association plant. Refinery Unit 2 was recently constructed to expand refining capacity. Both Unit 1 and Unit 2 use a distillation process. Asphalt production by a vacuum process was begun in Spring, 1985. Production of leaded and unleaded gasoline began in the Fall of 1985. This uses a water wash regeneration process using Sulfolane, a Texaco-patented solvent, in a closed syste...

Total capacity is 90,000 bpd, and the refinery currently operates at about 50,000 bpd. A 50,000 bbl crude storage tank is generally kept full. A 30,000 bbl residual product tank is generally kept nearly empty. There is tankage on-site for about 400,000 bbls of product storage which is generally about fifty percent full. In cases of excess production, refined product is reinjected into the TAPS. Product delivery off-site is by rail or truck, except that JP-4 is delivered to Fort Wainwright and Eielson AFB by the Haines Pipeline.

Other feedstocks, totaling about fifteen compounds, include tetraethyl lead, emul- sifiers, methyl cellulose (a mil spec additive for JP-4), and corrosion inhi- bitors to protect the refinery process equipment. Sulfuric acid and sodium hydroxide are used for pH control according to the 1975 application for a waste disposal permit (DEC NRO files). A single rail shipment of tetraethyl lead provided future needs for a considerable period of time, and the material is stored in a contained system in the metering building. Methyl cellulose is delivered by tank truck. The other additives are delivered in barrels and transferred to tanks. Lubricating oils and solvents are used for plant vehicles and maintenance. Solvents and waste oils are returned to the TAPS. A circulating propylene glycol system is used to heat trace product piping. Material safety data sheets on some of the chemicals stored have been collected for the file.

Records reviewed by Cronin list a total of 67,000 gallons of product spills in an 88 month time period. This includes spills into containment areas which were later recovered. Over 23,000 gallons of spilled product have been recovered from the soil and from groundwater.

There are four spill areas: 1) stormwater drainage system sumps, 2) the JP-4 storage tanks, 3) the rail car loading area, and 4) the residual product return line.

Drinking water for the refinery is obtained from a 90 to 100 foot deep on-site well. This well is monitored by refinery personnel. Test results to date indicate no contamination in excess of drinking water standards.

Drinking water within a three mile radius of the refinery is supplied by wells emplaced into the Tanana River floodplain alluvium. Total population using groundwater within a three mile radius is 7,300 persons, based on information provided by the Fairbanks North Star Borough. Some of these wells may be as shallow as twenty feet. The City of North Pole has a water system serving 250 hook ups, 190 of these being dwellings. The wells for the City water system are located about one mile north of the refinery.

The refinery is located on the floodplain alluvium of the Tanana River. Soils consist of several feet of surficial silts underlain by sands and gravels. The sands and gravels extend to at least four to five hundred feet deep.

The existence of discontinuous permafrost creates three distinct hydrologic regimes for groundwater: 1) water perched above the permafrost; 2) water confined below the permafrost; and 3) water present in an entirely thawed soil profile. These three regimes are considered to be hydraulically interconnected. The unpredictable distribution of permafrost makes it difficult to determine the path of groundwater at a given site, but the sands and gravels are permeable to groundwater flow. According to Duane Miller and Associates

(1983), the direction of groundwater flow is to the north/northwest at the refinery site at a gradient of one foot per one thousand feet. Groundwater depth is five to eight feet below the surface.

The documented release of petroleum based products to the groundwater within one mile of a community drinking water well is of concern, but it is not an issue that can be investigated by CERCLA. Of particular concern are the components of JP-4 which may exceed drinking water standards. But other DEC programs, such as the water quality program or the spill prevention and countermeasure program may be the means to investigate these concerns.

A site inspection of the facility was conducted by Tetra Tech on July 13, 1984. The following data gaps were listed: 1) past on-site disposal practices, 2) inventory of all hazardous substances on-site, and 3) records of past spills. Tetra Tech recommended a site inspection to fill the data gaps. Based on Tryck, Nyman & Hayes' (TNH) Phase I investigation, there is no evidence that past disposal practices are any different than present practices for CERCLA regulated substances. Hazardous chemicals used in the production process are stored on-site, but until they are spilled, they are subject to RCRA regulation. No evidence of spills of these substances was found. Spill records were reviewed by John Cronin of Shannon & Wilson, Inc., but these records only cover petroleum based products not regulated by CERCLA. Therefore, all of the concerns raised by Tetra Tech have been addressed in TNH's Phase I work effort.

In Phase II, TNH team members will compile all of the data collected in Phase I into a final report. The report can then be used in support of further DEC action.

3.0 PHASE II WORK PLAN

No field sampling is proposed for North Pole Refinery because the spilled petroleum products are not CERCLA regulated. The work objective in Phase II will be to produce a comprehensive report of background data to support future DEC action. The cost for this Phase II work is described in Table 1.

TABLE I
NORTH POLE REFINING
COST ESTIMATE
NORTH.MP

	P-4	P-3	P-2	P-1	CLER						TTL HRS	COST
	23.9	17.5		10.5	11							
ALL TASKS	16	64		24	16						120	$1930.40
TOTAL DOLLARS	382.4	1120	0	252	176	0	0	0	0	0	120	$1930.40

TOTAL DIRECT LABOR	$1930.40
SALARY OVERHEAD (0.3619)	$698.61
GEN. AND ADMIN. OVER. (1.2375)	$2388.87
TOTAL	$5017.88
PROFIT (10%)	$501.79
TOTAL	$5519.67
TRAVEL AND PERDIEM	
AIRFARE	$0.00
LODGING	$0.00
CAR RENTAL	$0.00
SUBTOTAL	$0.00
SUBTOTAL + 5% HANDLING	$0.00
DIRECT EXPENSES	
INSTRUMENT RENTAL	$0.00
SUPPLIES	$0.00
PACKAGING, AIRFRIEGHT	$0.00
SAFETY EQUIP.	$0.00
L.D. TELEPHONE	$35.00
POSTAGE, MAILING, MISC.	$25.00
COPIES(40*50pgs*$.15/pg)	$300.00
SUBTOTAL	$360.00
SUBTOTAL + 5%	$378.00
GRAND TOTAL TNH COSTS	$5897.67
SAIC COST	$322.00
SHANNON & WILSON COST	$713.50
SUBTOTAL FOR SUBCONSULTANTS	$1087.28
TOTAL	$6984.94

4.0 PERSONNEL SELECTION AND TRAINING

Report writing for the North Pole Refinery site will be performed by TNH team personnel selected from the following:

- Mr. Dan Crevensten (TNH) - Project Manager
- Mr. Keith Fabing (TNH)
- Ms. Mari Lynn Thurber (TNH)
- Mr. Richard Greiling (SAIC)
- Ms. Patt O'Flaherty (SAIC)
- Ms. Leigh Starlin (SAIC)
- Dr. Donald Weston (SAIC)
- Mr. Fred Brown (S&W)
- Mr. Tim Terry (S&W)

All personnel are trained, as appropriate, in the performance of site inspections, sampling, data interpretation, and regulatory programs.

5.0 HEALTH AND SAFETY PLAN

A detailed health and safety plan has been submitted to DEC in connection with previous TNH team site inspections. There will be no field inspection or sampling investigations at the North Pole Refinery site. Therefore, a site-specific health and safety plan is not necessary.